WHAT IS CLAIMED IS:

1. A method for monitoring transmissions over a unidirectional optical fiber loop coupling multiple nodes, characterized by:

measuring a round trip delay time for a signal sent from a first node to travel around the unidirectional optical fiber loop and be received at the first node, and

using the measured round trip delay time to account for temperature induced affects on signal transmissions over the unidirectional optical fiber loop.

2. The method in claim 1, further comprising:

measuring a first round trip delay time;

subsequently measuring a second round trip delay time;

determining a temperature-induced delay time correction based on the first and second round trip delay times; and

determining a time difference between the first node and one or more other nodes coupled to the unidirectional optical fiber loop based on the determined temperature-induced delay time correction.

3. The method in claim 2, further comprising:

time synchronizing the multiple nodes taking into account the determined temperature-induced delay time correction.

4. The method in claim 3, wherein a time difference between the synchronized nodes is in the range of one nanosecond to several microseconds.

5. The method in claim 2, wherein adjacent nodes in the unidirectional optical fiber loop are coupled together by an optical fiber link, further comprising:

determining a link time delay associated with one or more of the links, and

using one or more determined link time delays in determining one or more time difference between the first node and the one or more other nodes.

6. The method in claim 5, wherein optical time domain reflectometry is used in determining the time delay associated with each link.

7. The method in claim 5, wherein the temperature-induced delay time correction is based on a difference between the first and second round trip delay times and the one or more determined link time delays.

8. The method in claim 5, further comprising:

generating a time synchronization message based on the temperature-induced delay time correction, and

sending the time synchronization message from the first node to a second of the nodes to permit the second node to adjust the absolute time at the second node to be synchronized with the absolute time at the first node.

9. The method in claim 5, further comprising:

sending a timestamp message from one or more of the other nodes to the first node indicating a local time at that other node, and

determining a respective local time difference between the time in each received timestamp message and the local time at the first node.

10. The method in claim 1, wherein the first node is a main base station unit, including processing circuitry and a central clock source, and the one or more other nodes are remote base station units including radio transceiving circuitry for communicating over a radio interface with a mobile radio terminal,

wherein the mobile terminal determines one or more a round trip times (RTTs), the RTT corresponding to the time for an RTT message transmitted by the mobile terminal to travel to the remote base station unit and be returned from the remote base station unit to the mobile terminal, and

wherein the mobile terminal calculates the one or more RTTs using the measured round trip delay time.

11. The method in claim 10, further comprising:

the mobile terminal sending an RTT message to one of the remote base station units over the radio interface;

the one remote base station unit sending the RTT message to the main base station unit via the unidirectional optical fiber loop;

the main base station unit modifying the RTT message with a recently determined round trip delay time that accounts for temperature induced delay variations in the loop;

the main base station unit sending the modified RTT message to the remote base station unit via the unidirectional optical fiber loop;

the remote base station unit transmitting the modified RTT message to the mobile terminal over the radio interface; and

the mobile terminal determining the RTT based on the modified RTT message.

12. The method in claim 1, wherein one or more links of the unidirectional fiber loop are subjected to temperature variations greater than those to which one or more other portions of the unidirectional fiber loop are subjected.

13. The method in claim 1, further comprising:

calculating a temperature-induced delay time correction for one or more of the nodes other than the first node.

14. Apparatus for use in monitoring transmissions over a unidirectional optical fiber loop coupling multiple nodes, characterized by electronic circuitry configured to:

measure a round trip delay time for a signal sent from a first node to travel around the unidirectional optical fiber loop and be received at the first node, and

account for temperature induced affects on signal transmissions over the unidirectional optical fiber loop using the measured round trip delay time.

15. The apparatus in claim 14, wherein the electronic circuitry is located in a first one of the nodes associated with a central system clock and is further configured to:

determine a first round trip delay time;

subsequently determine a second round trip delay time;

determine a temperature-induced delay time correction based on the first and second round trip delay times; and

determine a time difference between the first node and one or more other nodes coupled to the unidirectional optical fiber loop based on the determined temperature-induced delay time correction.

16. The apparatus in claim 15, wherein the electronic circuitry is further configured to time synchronize the multiple nodes taking into account the determined temperature-induced delay time correction.

17. The apparatus in claim 16, wherein a time difference between the synchronized first and second nodes is in the range of one nanosecond to several microseconds.

18. The apparatus in claim 15, wherein adjacent nodes in the unidirectional optical fiber loop are coupled together by an optical fiber link, further comprising:

means for determining a link time delay associated with one or more of the links,

wherein the electronic circuitry is further configured to use one or more determined link time delays in determining the time difference between the first node and one or more other nodes.

19. The apparatus in claim 18, wherein means for determining uses optical time domain reflectometry in determining the time delay associated with each link.

20. The apparatus in claim 18, wherein the temperature-induced delay time correction is based on a difference between the first and second round trip delay times and the one or more determined link time delays.

21. The apparatus in claim 18, wherein the electronic circuitry is further configured to:

generate a time synchronization message based on the temperature-induced delay time correction, and

send the time synchronization message from the first node to a second of the nodes to permit the second node to adjust the absolute time at the second node to be synchronized with the absolute time at the first node.

22. The apparatus in claim 18, wherein one or more of the other nodes is configured to send a timestamp message to the first node indicating a local time at that other node, and

wherein the electronic circuitry is further configured to:

determine a respective local time difference between the time in each received timestamp message and the local time at the first node.

23. A system using the apparatus in claim 14, wherein the first node is a main base station unit and the one or more other nodes are remote base station units including radio transceiving circuitry for communicating over a radio interface with a mobile radio terminal,

wherein the mobile terminal is configured to determine one or more a round trip times (RTTs), the RTT corresponding to the time for an RTT message transmitted by the mobile terminal to travel to the remote base station unit and be returned from the remote base station unit to the mobile terminal, and

wherein the mobile terminal is configured to calculate one or more RTTs using the determined round trip delay time.

24. A system using the apparatus in claim 23, wherein:

the mobile terminal is configured to send an RTT message to one of the remote base station units over the radio interface;

the one remote base station unit is configured to send the RTT message to the main base station unit via the unidirectional optical fiber loop;

the main base station unit is configured to modify the RTT message with a recently determined round trip delay time that accounts for temperature induced delay variations in the loop;

the main base station unit is configured to send the modified RTT message to the remote base station unit via the unidirectional optical fiber loop;

the remote base station unit is configured to transmit the modified RTT message to the mobile terminal over the radio interface; and

the mobile terminal is configured to determine the RTT based on the modified RTT message.

25. The apparatus in claim 14, wherein one or more links of the unidirectional fiber loop are subjected to temperature variations greater than those to which one or more other portions of the unidirectional fiber loop are subjected.

26. The apparatus in claim 14, wherein the electronic circuitry is further configured to calculate a temperature-induced delay time correction for one or more of the nodes other than the first node.